

WHAT IS CLAIMED IS:

1. An adapter assembly for being attached to a flexible bulk bag having a body and a spout with an opening for discharging bulk material therefrom, said adapter assembly comprising:

a rigid annular adapter ring including an annular, radially-outwardly extending flange adapted for being engaged by a surrounding clamp; and
means for supporting said spout of said bulk bag.

2. The adapter assembly of claim 1 wherein said support means comprise at least one arm attached to and extending away from said adapter ring, said arm adapted to engage said bulk bag.

3. The adapter assembly of claim 1 further comprising a discharge device adapted to be attached to said adapter ring.

4. The adapter assembly of claim 3 wherein said discharge device is a funnel valve having an inlet end for being attached to said flange and an outlet including a valve for stopping and starting a flow of material.

5. The adapter assembly of claim 3 wherein said discharge device is a cone valve, comprising:

a tapered funnel having an inlet end with a first diameter for being attached to said flange, and an outlet end having a second diameter smaller than said first diameter; and

a cone disposed in said funnel, the base of said cone facing said outlet end, said cone being movable between a closed position in which a peripheral edge thereof of said cone seals against said funnel, and an open position in which material may flow between said peripheral edge and said funnel.

6. The adapter assembly of claim 3 wherein said discharge device is a split butterfly valve, comprising:

- a passive valve section including a passive valve disk movable between a closed position and an open position; and

- an active valve section removable connected to said passive valve section, said active valve section including an active valve disk movable between a closed position and an open position, wherein said passive valve disk is locked into said closed position when said active valve section is disconnected from said passive valve section.

7. An apparatus for storing and discharging bulk material, comprising:

- a flexible bulk bag for containing a flowable material, said bulk bag having a spout with an opening;

- an adapter assembly attached to said bag, comprising:

- a rigid annular adapter ring including an annular protruding flange; and

- means for supporting said spout of said bulk bag; and

- a discharge device attached to said adapter assembly for guiding material out of said bulk bag.

8. The adapter assembly of claim 7 wherein said support means comprise at least one arm extending away from said adapter ring, said arm adapted to engage said bulk bag.

9. The adapter assembly of claim 7 wherein said discharge device is a funnel valve having an inlet end for being attached to said flange and an outlet including a valve for stopping and starting a flow of material.

10. The adapter assembly of claim 7 wherein said discharge device is a cone valve, comprising:

a tapered funnel having an inlet end with a first diameter for being attached to said flange, and an outlet end having a second diameter smaller than said first diameter; and

a cone disposed in said funnel, the base of said cone facing said outlet end, said cone being movable between a closed position in which a peripheral edge thereof of said cone seals against said funnel, and an open position in which material may flow between said peripheral edge and said funnel.

11. The adapter assembly of claim 7 wherein said discharge device is a split butterfly valve, comprising:

a passive valve section including a passive valve disk movable between a closed position and an open position; and

an active valve section removable connected to said passive valve section, said active valve section including an active valve disk movable between a closed position and an open position, wherein said passive valve disk is locked into said closed position when said active valve section is disconnected from said passive valve section.

12. An apparatus for supporting a flexible bulk bag having a body and a spout with an opening for discharging bulk material therefrom, said apparatus comprising:

an adapter assembly for being attached to said bag, comprising:

a rigid annular adapter ring including an annular, radially-outwardly extending flange adapted for being engaged by a surrounding clamp; and

means for supporting said spout of said bulk bag; and

at least one support bracket adapted to be attached to said bulk bag and said adapter assembly, said support bracket cooperating with said adapter assembly to support said bulk bag in a tensioned condition.

13. The apparatus of claim 12 wherein said support bracket comprises a pair of spaced-apart vertical members bridged by a pair of generally C-shaped horizontally extending braces.

14. The apparatus of claim 13 wherein said support bracket includes at least one bag mount for receiving a mounting means carried by said bulk bag.

15. The apparatus of claim 14 wherein said bag mount is a cleat having a pair of pivoted jaws.

16. The apparatus of claim 12 wherein said adapter assembly and said support bracket include complementary alignment features for maintaining said adapter assembly in a fixed position relative to said support bracket.

17. A method for discharging material from a bulk bag having a spout with an outlet, comprising the steps of:

- disposing said bag with said spout facing upwards;
- attaching an adapter assembly to said bulk bag, said adapter assembly supporting said outlet in a rigid open shape;
- attaching a discharge device to said outlet;
- inverting said bulk bag; and
- allowing material to flow from said bulk bag through said outlet and said discharge device.

18. The method of claim 17, wherein said adapter assembly comprises:
a rigid annular adapter ring including an annular, radially-outwardly extending flange adapted for being engaged by a surrounding clamp; and
means for supporting said spout of said bulk bag in a tensioned condition.

19. The method of claim 18, wherein said step of placing said adapter assembly on said bulk bag comprises:

inserting the opening of said spout through said adapter ring;
folding the edge of said opening over said flange; and
clamping said edge of said bag against said flange.

20. The method of claim 17, wherein the step of allowing material to flow from said bulk bag through said outlet and said discharge device comprises selectively starting and stopping the flow of material through said discharge device.

21. The method of claim 20, wherein said discharge device is a funnel valve having an inlet end for being attached to said flange and an outlet including a valve for stopping and starting a flow of material.

22. The method of claim 20 wherein said discharge device is a cone valve, comprising:

a tapered funnel having an inlet end with a first diameter for being attached to said flange, and an outlet end having a second diameter smaller than said first diameter; and

a cone disposed in said funnel, the base of said cone facing said outlet end, said cone being movable between a closed position in which a peripheral edge thereof of said cone seals against said funnel, and an open position in which material may flow between said peripheral edge and said funnel.

23. The method of claim 20 wherein said discharge device is a split butterfly valve, comprising:

a passive valve section including a passive valve disk movable between a closed position and an open position; and

an active valve section removable connected to said passive valve section, said active valve section including an active valve disk movable between a closed position and an open position, wherein said passive valve disk is locked into said

closed position when said active valve section is disconnected from said passive valve section.

24. The method of claim 17 further comprising, subsequent to the step of attaching an adapter assembly to said bulk bag, attaching at least one support bracket to said bulk bag and to said adapter assembly such that said bulk bag is supported in a tensioned condition.

25. The method of claim 24 wherein the step of attaching a support bracket to said bulk bag and to said adapter assembly comprises positioning a pair of said support brackets on opposite sides of said bulk bag.

26. The method of claim 24 further comprising:
providing said bulk bag with mounting means;
providing said support bracket with at least one bag mount; and
attaching said mounting means to said bag mount.